INSURANCE & FINANCE DAY @ UNIPR

DIPARTIMENTO DI ECONOMIA

Giovedì
3 luglio
2014

Aula D
Dipartimento di Economia
Università di Parma
Via Kennedy, 6
Parma

11:30
MICHAEL SHERRIS
Longevity Risk, Health Status and
Annuity Pricing

14:00
ANDREA PALLAVICINI
GIULIO SARTORELLI
Implementing Stochastic Local Volatility
Models for FX Derivatives

14:45
CHIARA GUARDASONI
SIMONA SANFELICI
Fast numerical pricing of barriers options
under stochastic volatility and jumps

La partecipazione ai seminari è libera.
Tutti gli interessati sono i benvenuti.

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Giovedì 3 luglio 2014

Dipartimento di Economia Università di Parma - Aula D - Via J.F. Kennedy 6, Parma

11:30 - 12:30

MICHAEL SHERRIS

School of Risk and Actuarial Studies, CEPAR, University of New South Wales, Sydney, Australia

LONGEVITY RISK, HEALTH STATUS AND ANNUITY PRICING

Annuities are increasingly being offered as enhanced annuities to take into account both health status and survival prospects. Given the limited availability of Individual level data to calibrate these multiple state models for pricing such annuities, we develop a multiple state model with health states that assumes differing mortality rates by health state, includes systematic mortality trends and uncertainty in mortality rates and allows (approximate) calibration to population level health and mortality data. We calibrate the model to Australian population level health data and cohort survival data using health status based on relative mortality rates for a range of health conditions. We use the calibrated model to determine life annuity expected values and variances and compare the results with those from other models. We experiment with including a risk loading into the model and illustrate the impact on annuity prices based on health status.

14:00 - 14:45

ANDREA PALLAVICINI
GIULIO SARTORELLI

Financial Engineering - Banca IMI

IMPLEMENTING STOCHASTIC LOCAL VOLATILITY MODELS FOR FX DERIVATIVES

The pricing of barrier options and other path dependent derivatives depend on the whole dynamics of implied volatilities. Stochastic Local Volatility (SLV) models are designed to incorporate such information, while allowing a perfect fit of the implied volatilities observed at pricing date. We present a particular specification of the SLV model, and we focus on the calibration procedure. We illustrate how to employ fixed point techniques to calibrate model parameters in a two-step calibration procedure: first we fix the local volatility function, then we adapt it to fit the SLV model. We conclude the presentation by discussing barrier option pricing and comparing model prices to market quotes.

14:45 - 15:30

CHIARA GUARDASONI Dipartimento di Matematica, Università di Parma
SIMONA SANFELICI Dipartimento di Economia, Università di Parma

FAST NUMERICAL PRICING OF BARRIERS OPTIONS UNDER STOCHASTIC VOLATILITY AND JUMPS

We will treat how to achieve great computational savings and accuracy in the evaluation of barrier options through Boundary Element Method (BEM). The proposed method applies to quite general pricing models. The only requirement is the knowledge of the characteristic function for the underlying asset distribution, usually available under general asset models. We illustrate the implementation of BEM using numerical Fourier inverse transform of the characteristic function and show its numerical stability and efficiency under the simple Black-Scholes paradigm and under more sophisticated frameworks, such as Heston and Bates models.